

REMARKS

Reconsideration and withdrawal of the rejections in the Office Action are respectfully requested in view of the following remarks.

Summary of the Office Action

(1) Claim 11 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention. Specifically, the Examiner states that the claim recitation of claim 11, lines 2-3 is confusing.

(2) Claims 1-2, 6-11, 15-18, 22-25, 27-28, 30, and 32-36 are rejected under 35 U.S.C. §102(e) as being unpatentable over U.S. Patent No. 5,827,604 ("UNO").

The Office Action indicates that UNO discloses all of the elements of these rejected claims.

(3) Claims 3, 12, 19, 29 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,827,604 ("UNO") in view of U.S. Patent No. 5,509,200 ("FRANKENY").

The Office Action indicates that UNO discloses all of the elements of the rejected claims except for the plating layer surface being roughened. The Office Action relies on FRANKENY as a secondary document and states that FRANKENY shows a plating layer having a roughened surface. The Office Action concludes that it would have been obvious

to have a roughened surface on a plating layer in UNO to provide a reliable electrical connection, seal a boundary, and bind two or more stackable layers into the multi-layer circuit board.

(4) Claims 5, 14, 21, 31 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,827,604 (“UNO”) in view of U.S. Patent No. 6,127,633 (“KINOSHITA”)

The Office Action alleges that UNO discloses all of the elements of these claims except for the recitation of a further viahole is formed in the viahole. The Office Action further states that KINOSHITA shows a structure of wiring board having a further viahole formed in a viahole.

(5) Claim 26 is rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,827,604 (“UNO”) in view of U.S. Patent No. 4,769,270 (“NAGAMATSU”).

The Office Action alleges that NAGAMATSU shows an insulating layer made of a composite of fluororesin fiber cloth, wherein the cloth comprises voids and the thermosetting resin is impregnated in the voids in the cloth. The Office Action concludes that it would have been obvious to employ NAGAMATSU’s material in UNO in order to “achieve high performance in [“if”] a high region has been desired.”

Response to Rejections

- (1) *The rejection of claim 11 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter is traversed.*

Applicants respectfully submit that the basis for this rejection is not clear because it appears the Examiner did not complete the last sentence of paragraph 2 of the Office Action. Applicants also respectfully submit that the recitation of this claim is clear from the disclosure that the “depression is formed on a central surface portion of the plating layer surface extending out of the through-hole.” Therefore, the rejection should be withdrawn. However, should the rejection be maintained, it is respectfully submitted that a new Office Action should be issued, so that Applicants will have a full and fair opportunity to respond thereto.

- (2) *The rejection of claims 1-2, 6-11, 15-18, 22-25, 27-28, 30, and 32-36 under 35 U.S.C. §102(e) as being unpatentable over U.S. Patent No. 5,827,604 (“UNO”) is traversed.*

As the Examiner is well aware, in order to anticipate a claim, the document relied upon for the alleged anticipation must disclose each and every recitation of the rejected claim. UNO does not disclose all of the elements of the rejected claims and the rejection is improper and should be withdrawn on this basis alone.

Applicants respectfully submit that UNO fails to teach or suggest “through-holes having an inner wall substantially filled up with a plating layer having a substantially flat

surface....” as recited in independent claims 1, 9, 17, and 25. The recitation of “filled up” in these claims indicates that the inner wall is substantially and completely filled with a plating layer. UNO also fails to teach or suggest the recitation of claim 9 “wherein depressions are formed on a central surface portion of the plating layer surface extending out of the through-holes,” The present invention is directed to an arrangement of filled through holes, *i.e.*, through holes filled completely or substantially completely with electric conductive materials, adapted to form a fine conductor circuit pattern and provide highly reliable electrical connection between the conductive circuit layers, thus assuring a highly secure adhesion between the conductive circuit layer and interlaminar insulative resin layer. In contradistinction, the through holes of UNO are formed by the plating layer being deposited on the inner wall of the through-hole, not formed by the plating layer filled completely in the through-hole. In view of this difference alone, among others, the rejection should be withdrawn.

Referring to figure 5 of UNO, the Office Action states that UNO discloses a through hole (7) having an inner wall substantially filled up with a plating layer. Applicants respectfully submit that the through hole in Figure 5 is the reference number 8, not 7 as clearly described in lines 9-10, col 13 of the specification of UNO. Clearly, as can be seen in Figure 5, the through holes of UNO are not substantially filled up with any plating layers. Therefore, the Examiner’s interpretation of UNO is mistaken and the rejection based on

UNO should be withdrawn.

(3) The rejection of Claims 3, 12, 19, 29 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,827,604 (“UNO”) in view of U.S. Patent No. 5,509,200 (“FRANKENY”) is traversed.

Applicants respectfully submit that the combination of UNO and FRANKENY, even assuming, arguendo, that a proper suggestion or motivation for the combination exists, still fails to disclose or suggest that the through-hole be “substantially filled up with a plating layer.” For this reason alone, the obviousness rejections should be withdrawn.

Further, there must be some suggestion or motivation to combine the documents for such combination to be proper. In the present case, the alleged suggestion or motivation of providing “a reliable electrical connection, seal a boundary, and bind two or more stackable layers into the multi-layer circuit board” is not suggested or disclosed in either document but is a mere assertion in the Office Action. Therefore, the Office Action has not established a *prima facie* case of obviousness and the rejections should be withdrawn.

(4) The rejection of Claims 5, 14, 21, 31 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,827,604 (“UNO”) in view of U.S. Patent No. 6,127,633 (“KINOSHITA”) is also traversed.

Applicants respectfully submit that the combination of UNO and KINOSHITA, even assuming, arguendo, that a proper suggestion or motivation for such a combination exists, still fails to disclose or suggest that the through-hole be “substantially filled up with a plating layer.” For this reason alone, the obviousness rejection of these claims should be

withdrawn.

Further, the alleged suggestion or motivation of providing “an electrical contact of each layer of a multiplayer wiring board” is not suggested or disclosed in either document, but is a mere assertion in the Office Action. Therefore, the Office Action has not established a *prima facie* case of obviousness and the rejection should be withdrawn.

(5) *The rejection of claim 26 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,827,604 (“UNO”) in view of U.S. Patent No. 4,769,270 (“NAGAMATSU”) is also traversed.*

Applicants respectfully submit that the combination of UNO and NAGAMATSU, even assuming, arguendo, that a proper suggestion or motivation exists for the combination, still fails to disclose or suggest that the through-hole is “substantially filled up with a plating layer.” Thus, the obviousness rejection of this claim should be withdrawn.

Applicants further submit that contrary to the recited composite of fluoro resin fiber cloth and thermoplastic resin, NAGAMATSU’s inorganic fiber cloth (layer 4) is distinct (therefore not a composite of the two) from the thermoplastic resin layer 3. Therefore, NAGAMATSU does not disclose or suggest a composite as recited in claim 26. For this reason alone, this rejection should be withdrawn.

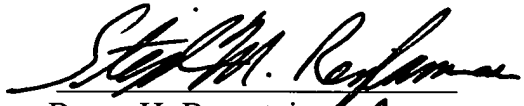
Further, the alleged suggestion or motivation of achieving “high performance in a high region has been desired” is not suggested or disclosed in either document, but is a mere assertion by the Examiner. Therefore, the Office Action has not established a *prima facie*

case of obviousness and the rejections should be withdrawn.

CONCLUSION

In view of the foregoing, it is believed that all of the claims in this application are in condition for allowance, which action is respectfully requested. If any issues yet remain which can be resolved by a telephone conference, the Examiner is respectfully invited to telephone the undersigned at the telephone number below.

Respectfully submitted,
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January 20, 2004
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